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RESEARCH ARTICLE

APPLICATION RESEARCH OF WISDOM AUDIT IN CHINA'S EAST INNER MONGOLIA ELECTRIC POWER COMPANY AUDIT CONSTRUCTION WORK.

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Abstract

With the development of artificial intelligence, the concept of "Wisdom Audit" emerge as the times require. At present, there have been many successful cases of wisdom audit projects at home and abroad, we are full of confidence in the implementation of "Wisdom Audit" in East Inner Mongolia Electric Power Co., Ltd.. This paper evaluates the implementation effect of East Inner Mongolia Electric Power Co., Ltd.'s smart audit work through fuzzy comprehensive evaluation method. The result shows that the application of smart audit in this company is good. This article proposes to carry out the wisdom audit work plan and strive to extend the concept of wisdom audit to the company's audit work.Its purpose is to continuously improve the efficiency and accuracy of audit work.

Introduction:-

Wisdom audit refers to relying on big data, cloud computing, "Internet Plus" and other information technologies to realize the digitization and standardization of various audit information through the construction of a wisdom audit platform, the scientific and standardized of audit process, mine audit data and make full use of it to improve audit efficiency and quality of the innovative audit model. Wisdom audit is the innovation and development of traditional auditing, it represents the future auditing direction. The main features of wisdom audit are based on big data as the core of information technology, with a smart audit platform as the means to achieve, with the ultimate goal of improving audit efficiency and quality.

In the era of information economy, constructing a comprehensive audit network system based on state-owned enterprises, independent audit institutions and regulatory agencies is conducive to achieve the standardization, automation and full sharing of core financial data of enterprises, and escorting the healthy and orderly development of the state-owned economy. For this, domestic and foreign scholars have carried out certain researches. Ameliaa. Baldwin et al. (2006) argued that the development of new artificial intelligence is fruitful in auditing, proposed that it is the nature of auditing which provides motivation for the use of artificial intelligence [1]. Jing Yu et al. (2010) proposed a new intelligent data auditing model by combining data mining technology with the auditing field [2]. MeriyemChergui et al. (2014) demonstrated how to use a multi-intelligent system and inter-organizational workflow to computerize IT governance audits, opening up a new perspective for the intelligent development of auditing in a "supply and demand relationship"[3]. Hefatai (2016) believed that the work of wisdom audit must adhere to the audit problem-oriented, data-based, in accordance with the "general analysis - key audit business analysis - analysis of key audit matters" layer-by-layer structure, looking for data anomalies, then attack accuratly[4]. Li Yun Hong

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(2017) proposed in his article that the audit work should be start with "problem and risk double guidance" , combine with the research of "big data" and "cloud audit" to promote the construction of new Audit Information System Platform, this view provides a way for the improvement of the audit information construction program [5]. Liang Yu (2017) pointed out that, under the new reform background, audit of state-owned assets and companies ought to build a huge data audit work model and strengthen wisdom audits [6]. Zhang Qing et al. (2017) believed that for power companies, the development of green audit work should be based on the three principles of fairness, legitimacy and efficiency [7]. Zhang Wen Hua et al. (2018) uses China Telecom as the research object to construct an internal wisdom auditing system as risk-oriented [8].

The scholars above mostly explore the processes, modes and schemes of intelligent application in the audit field from a qualitative perspective, but lack the dimension of quantitative evaluation. Therefore, this paper will carry out fuzzy comprehensive evaluation of the implementation effect of the wisdom audit of East Inner Mongolia Electric Power Co., Ltd. in China, and propose an effective application strategy, so as to provide reference for management decision-making.

Evaluation of the implementation of wisdom auditing:-

Build a Wisdom Audit to Carry Out an Effectiveness Evaluation Index System:-

This paper takes the results of wisdom audit as the target layer, designs three first-level indicators and 11 second-level indicators, and builds an evaluation index system, as shown in Table 1.

Table 1:-Wisdom audit performance evaluation index system

First Grade Indexes(A)	Second Grade Indexes(B)
Financial (A1)	Asset-liability Ratio(B1)
	Current Ratio(B2)
	Accounts Receivable Turnover(B3)
	Unit Power Supply Cost(B4)
Personnel(A2)	Wisdom Auditing Awareness(B5)
	Skill Level(B6)
	Education Background(B7)
	The Proportion of Staff Education Expenditure in Total Cost(B8)
Procedure(A3)	Wisdom Auditing Mode Coverage(B9)
	Internal System Completeness(B10)
	Auditing Efficiency(B11)

Confirm Index Weight:-

By inviting many experts from East Inner Mongolia Electric Power Co., Ltd., accounting firm and government audit department, this paper uses order relation method（GI）[9-10] to obtain the weight of each indicator of the evaluation of wisdom auditing, as shown in Table 2.

Table 2:- Effectiveness evaluation index weight table

First Grade Indexes	Weight	SecondGrade Indexes	Weight
A1	0.2968	B1	0.3723
		B2	0.2045
		B3	0.2659
		B4	0.1573
A2	0.2283	B5	0.3675
		B6	0.2624
		B7	0.1682
		B8	0.2019
A3	0.4749	B9	0.2970
		B10	0.1980
		B11	0.5050

Fuzzy Comprehensive Evaluation of the Wisdom Auditing Effect:-

The comments that set the wisdom audit implementation effect evaluation model are divided into five levels, and the evaluation set V= {excellent, good, medium, poor, very poor} is established. In order to simplify the calculation, the evaluation sets of the first layer and the second layer are the same. The experts who participated in the score included 5 East Inner Mongolia Electric Power Company, 4 accounting firms and 3 government agencies. According to the situation of East Inner Mongolia Electric Power Co., Ltd., each expert judged the corresponding indicators. The results are shown in Table 3.

Table 3:- Evaluation results of each indicator

First Grade Indexes	Second Grade Indexes	Evaluation Results				
		Excellent	good	medium	poor	very poor
A1	B1	7	3	1	1	0
	B2	4	5	3	0	0
	B3	4	8	0	0	0
	B4	1	3	5	3	0
A2	B5	7	4	1	0	0
	B6	4	3	5	0	0
	B7	2	4	6	0	0
	B8	6	2	3	1	0
A3	B9	3	9	0	0	0
	B10	1	9	2	0	0
	B11	7	5	0	0	0

First-level Fuzzy Comprehensive Evaluation:-

According to the evaluation results of each sub-factor of the A1 indicator in Table 3, the fuzzy evaluation matrix R1 of A1 obtained by fuzzy calculation is:

$$R1=\begin{bmatrix}0.583 & 0.250 & 0.083 & 0.083 & 0\\ 0.333 & 0.417 & 0.250 & 0.000 & 0\\ 0.333 & 0.667 & 0.000 & 0.000 & 0\\ 0.083 & 0.250 & 0.417 & 0.250 & 0\end{bmatrix}$$

In this paper, the weighted average M(·,+) operator is used to perform fuzzy operation on R1, and the comprehensive evaluation vector C1 of A1 is obtained:

$$C1 = w1^{\circ}R1 = (0.3722, 0.2045, 0.2659, 0.1573)^{\circ}\begin{bmatrix}0.583 & 0.250 & 0.083 & 0.083 & 0\\ 0.333 & 0.417 & 0.250 & 0.000 & 0\\ 0.333 & 0.667 & 0.000 & 0.000 & 0\\ 0.083 & 0.250 & 0.417 & 0.250 & 0\end{bmatrix}$$

$$= (0.387, 0.395, 0.148, 0.070, 0)$$

Similarly, the fuzzy evaluation value of other indicators can be calculated.

$$C2 = w2^{\circ}R2 = (0.3675, 0.2624, 0.1682, 0.2019)^{\circ}\begin{bmatrix}0.583 & 0.333 & 0.083 & 0.000 & 0\\ 0.333 & 0.250 & 0.417 & 0.000 & 0\\ 0.167 & 0.333 & 0.500 & 0.000 & 0\\ 0.500 & 0.167 & 0.250 & 0.083 & 0\end{bmatrix}$$

$$= (0.431, 0.278, 0.274, 0.017, 0)$$

$$C3 = w3^{\circ}R3 = (0.2970, 0.1980, 0.5050)^{\circ}\begin{bmatrix}0.667 & 0.750 & 0.000 & 0.000 & 0\\ 0.083 & 0.750 & 0.167 & 0.000 & 0\\ 0.583 & 0.417 & 0.000 & 0.000 & 0\end{bmatrix}$$

$$= (0.509, 0.582, 0.033, 0, 0)$$

Second-Level Comprehensive Evaluation:-

Through the results of the first-level fuzzy evaluation,the fuzzy evaluation matrix R of the first-level factor set can be further obtained.

$$R = \begin{bmatrix} C1 \\ C2 \\ C3 \end{bmatrix} = \begin{bmatrix} 0.387 & 0.395 & 0.148 & 0.070 & 0 \\ 0.431 & 0.278 & 0.274 & 0.017 & 0 \\ 0.509 & 0.582 & 0.033 & 0.000 & 0 \end{bmatrix}$$

Using M(·,+) operator for fuzzy operations,the comprehensive evaluation vector Q is obtained from W = (0.2968, 0.2283, 0.4749).

$$Q = w^{\circ}R = (0.2968, 0.2283, 0.4749)^{\circ} \begin{bmatrix} 0.387 & 0.395 & 0.148 & 0.070 & 0 \\ 0.431 & 0.278 & 0.274 & 0.017 & 0 \\ 0.509 & 0.582 & 0.033 & 0.000 & 0 \end{bmatrix}$$
$$= (0.455, 0.457, 0.122, 0.025, 0)$$

According maximum membership degree law, the evaluation result of the wisdom audit implementation of East Inner Mongolia Electric Power Co., Ltd. was 0.457, and the comment was "good", indicating that the application effect of wisdom audit in East Inner Mongolia Electric Power Co., Ltd. was good.

Implementation Strategy of East Inner Mongolia Electric Power Co., Ltd. Wisdom Audit:-

Based on the results of fuzzy comprehensive evaluation, the following four strategies were proposed for the implementation of wisdom audit by East Inner Mongolia Electric Power Co., Ltd..

Declaring the Concept of Wisdom Audit:-

The company can preach the connotation of wisdom audit through organizing conferences, guide employees to establish new auditing concepts and actively explore the construction path of smart auditing, then make suggestions for the implementation of smart auditing. The suggestions can be divided into three steps: First of all, the company should focus on the case of domestic smart audit implementation, and analyze the connotation and characteristics of smart audit based on foreign development trends and necessary theoretical basis; Secondly, the company can discuss and summarize the experience of the successful or failed implementation of the wisdom audit through the meeting and put forward suggestions for improvement,point out the impetus and resistance that the company may meet, and let the employees with ideas put forward the implementation concept of the smart audit; Lastly,the company should record the problems that may occur in the implementation of smart audit and focus on them.

Building a Wisdom Audit Platform:-

The wisdom audit platform is a tool for implementing wisdom auditing and a necessary condition for the smooth implementation of wisdom auditing. East Inner Mongolia Electric Power Co., Ltd. should build a smart audit platform in the era of big data, which can be planned according to Fig. 1.

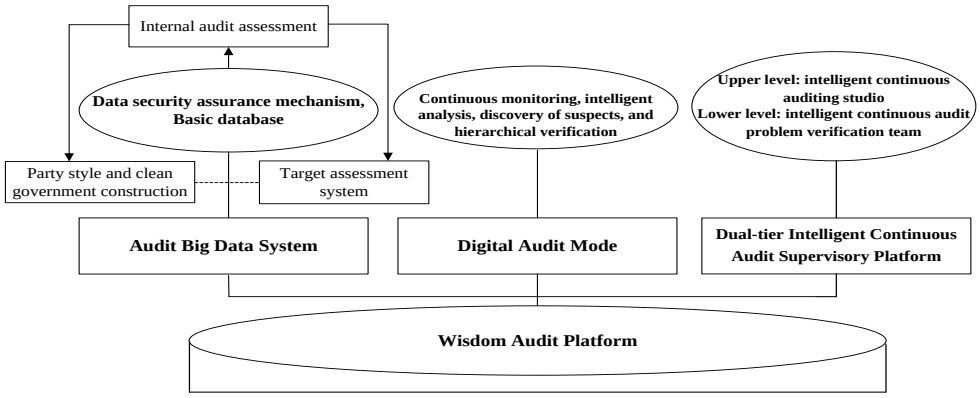

Fig.1:-Inner Mongolia Eastern Electric Power Company's implementation of wisdom audit work plan

It mainly includes audit big data system, digital audit mode and dual-tier intelligent continuous audit supervisory platform. The audit big data system is the foundation of the platform construction. In order to solve the problem of data collection difficulties, we can firstly incorporate the internal audit assessment mechanism into the local party style,clean government construction and target assessment system, require all units to submit financial statements, financial and business electronic data to the higher authorities on a regular basis. Secondly, the company can

establish a security assurance mechanism for grassroots audit data by introducing management methods for electronic data collection and use. We know that the digital auditing model is the soul of the smart auditing platform.

Therefore, the company should explore the digital auditing model, introduce software or conduct independent research and development, conduct test operations according to the objectives expected from the implementation of smart auditing, reference literature and successful cases, strive to create a digital auditing model of "continuous monitoring, intelligent analysis, discovery of suspects, and hierarchical verification". As we all know that double-layer intelligent continuous audit supervision platform is the guarantee for the construction of large platforms. The upper level establishes an intelligent continuous auditing studio, selects high-quality personnel with professional backgrounds such as financial management, marketing management, engineering management and computer technology, and forms an intelligent continuous audit data analysis team to implement centralized office work and centralized big data analysis, focus on online monitoring and accurate positioning. The lower level set up an intelligent continuous audit problem verification team to give full play to the advantages of the auditors of the grassroots units who are familiar with the operation and management of the unit, conduct decentralized verification of the problems and doubts found, and be responsible for tracking the problem rectification. In combination with the auditor's work experience and professional expertise, the monitoring points are assigned to people, and the monitoring tasks are completed according to the time nodes of the implementation plan.

Cultivate and Introduce Compound Talents:-

The construction of wisdom auditing relying on the development of information technology has greatly reduced the use of manpower in audit work, but high-quality audit talents, talents with both auditing and computer professionalism are still indispensable. For employees of the audit department, East Inner Mongolia Electric Power Co., Ltd. can conduct personnel training through external experts, case teaching, and centralized research, then it can select some employees with strong reception ability and excellent performance to carry out key training, and persons with high level of informationization in other departments of the company may be appropriately introduced into the audit department and trained in auditing expertise. When recruiting persons outside company, auditing personnel with information technology background should be given priority. The company can also introduce information technology companies as well as external colleges or universities to conduct consultations on talents. The most important thing is to encourage auditors to use, dare to use, and could use big data to guide the establishment of big data auditing thinking, become a "data scientist" in the auditing industry, break through the depth and breadth of auditing issues. In this regard, all levels of units can comprehensively develop training courses for cultivating big data thinking and constructing analytical models, and guide auditors to find out the ideas of wisdom auditing from problems. At the same time, further improve the continuing education and classification, grading, and post-training systems for auditing cadres, strengthen the construction of audit cadre education and training network platform, increase the promotion and application of audit case teaching, continuously improve the comprehensive strength of the audit team, providing talent reserve and support for audit thinking innovation .

Conducting Wisdom Auditing Pilots:-

In order to evaluate the implementation effectiveness of the wisdom auditing timely, improve the deficiencies in the specific promotion process, save time and funds, after the preparation of the wisdom audit has been completed, the audit work of some businesses should be piloted. Then select some related auditing businesses to use the wisdom auditing platform, obtain audit data and analysis results, compare and analyze the auditing staff's auditing conclusions, to find out the improvement by implementing the smart audit for the original audit work and the problems that occurred in this process were modified and improved in a targeted manner. The audit department should arrange for a person to be responsible for recording the problems and improvement in the implementation process of the wisdom audit, and ensuring the smooth development of the wisdom audit in the company.

Conclusion:-

On the basis of expounding the connotation and characteristics of smart audit, this paper summarizes the status of smart audit research at home and abroad, uses the fuzzy comprehensive evaluation to analyze the implementation effect of East Inner Mongolia Electric Power Co., Ltd.'s smart audit, obtains the conclusion that East Inner Mongolia Electric Power Co., Ltd.'s wisdom audit implementation effect is good. It can be seen that the smart audit work of East Inner Mongolia Electric Power Co., Ltd. has begun to take effect at this stage.The internal system should be improved according to the results of this survey. With the help of the intelligent audit platform, the talent advantage will be exerted and the audit efficiency of the company will be further improved. At the same time, it is

suggested to promote the application of smart audit in the audit construction work of East Inner Mongolia Electric Power Co., Ltd. through the structure of concept-platform-talent-pilot.

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